UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,291	09/26/2003	Miwa Kozawa	031181	6427

38834 7590 03/23/2009

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER	
CHACKO DAVIS, DABORAH	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
03/23/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/670,291	KOZAWA ET AL.	
	Examiner	Art Unit	
	DABORAH CHACKO DAVIS	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5,7,8 and 13-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-2,5,7-8,13-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 13, 15, 16, 18, 19, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1, 13, 15, 16, 18, and 19, recite "1.5625g to 3.125g with respect to 100g of the resin of at least one surfactant". This limitation is not disclosed in the specification. None of the working examples in the instant specification disclose this claimed limitation. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 5, 7-8, 13-18, are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Application Publication No. 2001-109165 (Kanda et

al., hereinafter referred to as Kanda) in view of U. S. Patent No. 6,410,677 (Enoki et al., hereinafter referred to as Enoki) and U. S. Patent Application Publication No. 2002/0192593 (Nagai et al., hereinafter referred to as Nagai).

Kanda, in the abstract, in [0001], [0013], [0017], [0019], [0020], discloses a coating material that fattens the resist pattern (resist pattern thickening material, includes an ArF resist such as acrylic resin) comprising a water-soluble resin, a non-ionic surfactant, and an organic solvent (claims 1-2, 5, and 13). Kanda, in [013], discloses that the water-soluble resin of the coating material is a polyvinyl alcohol. Kanda, in [0013], discloses that the water-soluble resin is a heterocyclic compound such as a polyvinyl pyrrolidone (has a cyclic structure) (claims 7-8). Kanda, in [0020], discloses that the organic solvent is an alcohol solvent (claim 14). Kanda, in the abstract, in [0002], [0011], [0012], [0013], [0019], [0020], [0033], discloses forming a resist pattern (resist pattern to be thickened) for a semiconductor device, forming a coating material (enveloping layer, reference 3 of figures 1, and 2) on the formed resist pattern, wherein the coating material (resist pattern thickening material) fattens the resist pattern, said coating material includes a resin, a surfactant, and an organic solvent (claims 15-16, and 18). Kanda, in [0022], [0023], [0024], discloses that the developing processing is performed after the formation of the coating material on the resist pattern (claim 17).

The difference between the claims and Kanda is that Kanda does not disclose the surfactants recited. Kanda does not disclose the claimed amount of surfactant in grams/100g of the resin.

Enoki, in col 2, lines 63-67, and in col 3, lines 1-30, discloses that the surfactant is either a non-ionic surfactant such as polyoxyethylene alkyl ether, or a cationic surfactant such as an alkyl amine salt, or an amphoteric surfactant such as betaine.

The difference between the claims and Kanda in view of Enoki is that Kanda in view of Enoki does not disclose the claimed amount of surfactant in grams/100g of the resin.

Nagai, in [0621], discloses that the amount of surfactant is 2 parts by weight for 100 parts by weight of the resin.

Therefore, it would be obvious to a skilled artisan to modify Kanda by employing at least one of the claimed surfactants taught by Enoki because Enoki, in col 2, lines 64-66, and in col 3, lines 1-30, discloses that the surfactant as component (A) enables the resin composition to be an insulating material. It would be obvious to a skilled artisan to modify Kanda in view of Enoki by employing the claimed range of surfactants as suggested by Nagai because Nagai, in [0617], through [0621], discloses that using the surfactants in the claimed range in a resist composition improves the applicability of the composition and developability as a resist.

5. Claims 19-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Application Publication No. 2001-109165 (Kanda et al., hereinafter referred to as Kanda) in view of U. S. Patent No. 6,410,677 (Enoki et al., hereinafter referred to as Enoki) and U. S. Patent Application Publication No. 2002/0192593 (Nagai

et al., hereinafter referred to as Nagai) and further in view of U. S. Patent No. 6,319,853 (Ishibashi et al., hereinafter referred to as Ishibashi).

Kanda, in the abstract, in [0002], [0011], [0012], [0013], [0019], [0020], [0033], discloses forming a resist pattern (resist pattern to be thickened, includes an ArF resist such as acrylic resin) for a semiconductor device, forming a coating material (enveloping layer, reference 3 of figures 1, and 2) on the formed resist pattern, wherein the coating material (resist pattern thickening material) fattens the resist pattern, said coating material includes a resin, a surfactant, and an organic solvent. Kanda, in [013], discloses that the water-soluble resin of the coating material is a polyvinyl alcohol . Kanda, in [0013], discloses that the water-soluble resin is a heterocyclic compound such as a polyvinyl pyrrolidone (has a cyclic structure) (claim 19). Kanda, in [0011], discloses that the resist material (for forming the resist pattern, the resist pattern to be thickened) is an acrylic resist (claim 20).

The difference between the claims and Kanda is that Kanda does not disclose the surfactants recited. Kanda does not disclose the claimed amount of surfactant in grams/100g of the resin.

Enoki, in col 2, lines 63-67, and in col 3, lines 1-30, discloses that the surfactant is either a non-ionic surfactant such as polyoxyethylene alkyl ether, or a cationic surfactant such as an alkyl amine salt, or an amphoteric surfactant such as betaine.

The difference between the claims and Kanda in view of Enoki is that Kanda in view of Enoki does not disclose using the resist pattern to pattern the underlying layer.

Kanda in view of Enoki does not disclose the claimed amount of surfactant in grams/100g of the resin.

Nagai, in [0621], discloses that the amount of surfactant is 2 parts by weight for 100 parts by weight of the resin.

The difference between the claims and Kanda in view of Enoki and Nagai is that Kanda in view of Enoki and Nagai does not disclose using the resist pattern to pattern the underlying layer

Ishibashi, in col 24, lines 2-25, discloses that the thickened resist pattern (second resist pattern, after developing the coating material formed on the resist pattern) is used as an etching mask to etch the underlying layer (semiconductor substrate).

Therefore, it would be obvious to a skilled artisan to modify Kanda by employing at least one of the claimed surfactants as taught by Enoki because Enoki, in col 2, lines 64-66, and in col 3, lines 1-30, discloses that the surfactant as component (A) enables the resin composition to be an insulating material. It would be obvious to a skilled artisan to modify Kanda in view of Enoki by employing the claimed range of surfactants as suggested by Nagai because Nagai, in [0617], through [0621], discloses that using the surfactants in the claimed range in a resist composition improves the applicability of the composition and developability as a resist. It would be obvious to a skilled artisan to modify Kanda in view of Enoki and Nagai by employing the etch process suggested by Ishibashi because Kanda, in [0002], discloses that the resist pattern formed can be used as an etching resist mask to manufacture semiconductor devices and circuit boards.

Response to Arguments

6. Applicant's arguments, see Remarks, filed February 9, 2009, with respect to the rejection(s) of claim(s) 1-2, 5, 7-8, 13-20 under 35 U. S. C. 103 (a) rejections have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made further in view of U. S. Patent Application Publication No. 2002/0192593 Nagai et al).

A) Applicants argue that none of the references i.e., neither Kanda nor Enoki nor Ishibashi discloses that the content of the surfactant is 1.5625g to 3.125g with respect to 100 g of the resin.

Neither Kanda nor Enoki nor Ishibashi is depended upon to disclose this limitation. Nagai is depended upon to teach the claimed surfactant amount. See paragraph nos. 4, and 5, above.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Daborah Chacko-Davis/
Examiner, Art Unit 1795

March 16, 2009.